
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Alan P. Kozikowski *et al.*

Examiner: Celia C. Chang

Application No.: 10/576,620

Art Unit: 1625

Filed: March 8, 2007

Atty. Docket No.: **GUX-010.01**

Title: *Dopamine-, Norepinephrine-, and
Serotonin-Transporter-Selective
Heterocyclic Compounds and Their
Therapeutic Applications*

Confirmation No: 4324

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AMENDMENT & RESPONSE

Dear Examiner Chang:

In response to the Final Office Action in the above-identified application, which was dispatched on August 26, 2011, the Applicants submit this paper. No new matter has been added.

Amendments to the Claims begin on page 2.

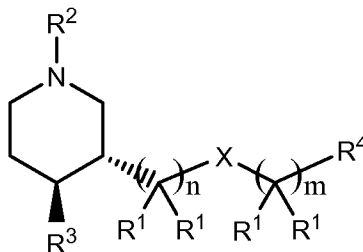
Remarks begin on page 8.

EXAMINER'S AMENDMENT

~~CLAIMS~~

This listing of the claims will replace all prior versions and listings of the claims in the application.

1. **(currently amended)** A compound represented by formula I:



wherein

R¹ represents independently for each occurrence H or alkyl;

R² is H, alkyl, aryl, aralkyl, or -C(O)R⁵;

R³ is ^{optionally substituted} aryl, heteroaryl, or aralkyl;

R⁴ is ~~hydrogen, hydroxyl, aryl, heteroaryl, OR⁵, CO₂R⁶, C(O)N(R⁶)₂, C(O)NHOH, OC(O)R⁵, or oxadiazole;~~

R⁵ is alkyl, aryl, heteroaryl, or aralkyl;

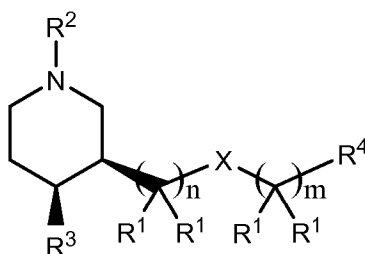
R⁶ represents independently for each occurrence hydrogen, alkyl, aryl, or aralkyl, wherein any two instances of R⁶ may be covalently attached to form a ring;

X is S, -S(O)-, or -S(O₂)-;

n is 1, 2, 3, or 4; and

m is 1, 2, 3, or 4.

2. **(currently amended)** A compound represented by formula II:



II

wherein

R¹ represents independently for each occurrence H or alkyl;

R² is H, alkyl, aryl, aralkyl, or -C(O)R⁵;

R³ is optionally substituted
~~aryl, heteroaryl, or aralkyl;~~

R⁴ is ~~hydrogen, hydroxyl, aryl, heteroaryl, OR⁵, CO₂R⁶, C(O)N(R⁶)₂, C(O)NHOH,~~
 OC(O)R⁵, or oxadiazole;

R⁵ is alkyl, aryl, heteroaryl, or aralkyl;

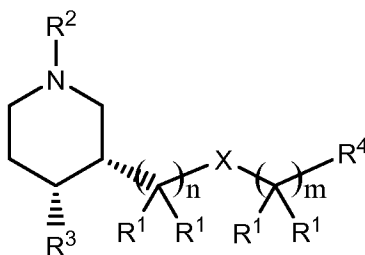
R⁶ represents independently for each occurrence hydrogen, alkyl, aryl, or aralkyl,
 wherein any two instances of R⁶ may be covalently attached to form a ring;

X is S, -S(O)-, or -S(O₂)-;

n is 1, 2, 3, or 4; and

m is 1, 2, 3, or 4.

3. **(currently amended)** A compound represented by formula III:



III

wherein

R^1 represents independently for each occurrence H or alkyl;

R^2 is H, alkyl, aryl, aralkyl, or $-C(O)R^5$;

R^3 is ^{optionally substituted} aryl, heteroaryl, or aralkyl;

R^4 is ~~hydrogen, hydroxyl, aryl, heteroaryl, OR^5 , CO_2R^6 , $C(O)N(R^6)_2$, $C(O)NHOH$, $OC(O)R^5$, or oxadiazole~~;

R^5 is alkyl, aryl, heteroaryl, or aralkyl;

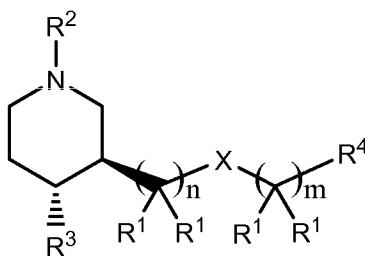
R^6 represents independently for each occurrence hydrogen, alkyl, aryl, or aralkyl, wherein any two instances of R^6 may be covalently attached to form a ring;

X is S, $-S(O)-$, or $-S(O_2)-$;

n is 1, 2, 3, or 4; and

m is 1, 2, 3, or 4.

4. **(currently amended)** A compound represented by formula **IV**:



IV

wherein

R^1 represents independently for each occurrence H or alkyl;

R^2 is H, alkyl, aryl, aralkyl, or $-C(O)R^5$;

R^3 is ^{optionally substituted} aryl, heteroaryl, or aralkyl;

R^4 is ~~hydrogen, hydroxyl, aryl, heteroaryl, OR^5 , CO_2R^6 , $C(O)N(R^6)_2$, $C(O)NHOH$, $OC(O)R^5$, or oxadiazole~~;

R^5 is alkyl, aryl, heteroaryl, or aralkyl;

R^6 represents independently for each occurrence hydrogen, alkyl, aryl, or aralkyl, wherein any two instances of R^6 may be covalently attached to form a ring;

X is S, -S(O)-, or -S(O₂)-;

n is 1, 2, 3, or 4; and

m is 1, 2, 3, or 4.

Claims 5-23 (canceled)

⁵
~~24.~~ (original) The compound of claim 2, wherein X is S or -S(O)-.

⁶
~~25.~~ (original) The compound of claim 2, wherein R^2 is methyl, ethyl or propyl.

⁷
~~26.~~ (original) The compound of claim 2, wherein R^2 is methyl.

⁸
~~27.~~ (currently amended) The compound of claim 2, wherein R^3 is ~~aryl~~ optionally substituted phenyl.

⁹
~~28.~~ (currently amended) The compound of claim [[2]] ⁸~~27~~, wherein R^3 is halophenyl.

¹⁰
~~29.~~ (currently amended) The compound of claim [[2]] ⁸~~27~~, wherein R^3 is 3-chlorophenyl.

30. (canceled)

¹¹
~~31.~~ (currently amended) The compound of claim 2, wherein R^4 is ~~C(O)N(R⁶)₂~~ and R^6 represents independently for each occurrence hydrogen or alkyl.

¹²
~~32.~~ (original) The compound of claim 2, wherein X is S, n is 1, m is 1, R^1 is hydrogen, R^2 is methyl, and R^3 is 3-chlorophenyl.

33. (canceled)

¹³
~~34.~~ (original) The compound of claim 2, wherein X is S, n is 1, m is 1, R^1 is hydrogen, R^2 is methyl, R^3 is 3-chlorophenyl, and R^4 is C(O)N(H)iPr.

¹⁴
~~35.~~ (original) The compound of claim 3, wherein X is S or -S(O)-.

¹⁵
~~36.~~ (original) The compound of claim 3, wherein R^2 is methyl, ethyl or propyl.

¹⁶
~~37.~~ (original) The compound of claim 3, wherein R^2 is methyl.

- 17
~~38.~~ **(currently amended)** The compound of claim 3, wherein R³ is ~~aryl~~ ^{optionally} substituted phenyl ~~substituted phenyl~~.
- 18
~~39.~~ **(currently amended)** The compound of claim ~~[[3]]~~ ¹⁷ ~~38~~, wherein R³ is halophenyl.
- 19
~~40.~~ **(currently amended)** The compound of claim ~~[[3]]~~ ¹⁷ ~~38~~, wherein R³ is 3-chlorophenyl.
41. **(canceled)**
- 20
~~42.~~ **(currently amended)** The compound of claim 3, wherein R⁴ is ~~C(O)N(R⁶)₂~~ and R⁶ represents independently for each occurrence hydrogen or alkyl.
- 21
~~43.~~ **(original)** The compound of claim 3, wherein X is S, n is 1, m is 1, R¹ is hydrogen, R² is methyl, and R³ is 3-chlorophenyl.
44. **(canceled)**
- 22
~~45.~~ **(original)** The compound of claim 3, wherein X is S, n is 1, m is 1, R¹ is hydrogen, R² is methyl, R³ is 3-chlorophenyl, and R⁴ is C(O)N(H)iPr.
- 23
~~46.~~ **(original)** The compound of claim 4, wherein X is S or -S(O)-.
- 24
~~47.~~ **(original)** The compound of claim 4, wherein R² is methyl, ethyl or propyl.
- 25
~~48.~~ **(original)** The compound of claim 4, wherein R² is methyl.
- 26
~~49.~~ **(currently amended)** The compound of claim 4, wherein R³ is ~~aryl~~ ^{optionally} substituted phenyl ~~substituted phenyl~~.
- 27
~~50.~~ **(currently amended)** The compound of claim ~~[[4]]~~ ²⁶ ~~49~~, wherein R³ is halophenyl.
- 28
~~51.~~ **(currently amended)** The compound of claim ~~[[4]]~~ ²⁶ ~~49~~, wherein R³ is 3-chlorophenyl.
52. **(canceled)**
- 29
~~53.~~ **(currently amended)** The compound of claim 4, wherein R⁴ is ~~C(O)N(R⁶)₂~~ and R⁶ represents independently for each occurrence hydrogen or alkyl.
- 30
~~54.~~ **(original)** The compound of claim 4, wherein X is S, n is 1, m is 1, R¹ is hydrogen, R² is methyl, and R³ is 3-chlorophenyl.
55. **(canceled)**

31

~~56.~~ **(original)** The compound of claim 4, wherein X is S, n is 1, m is 1, R¹ is hydrogen, R² is methyl, R³ is 3-chlorophenyl, and R⁴ is C(O)N(H)iPr.

Claims 57-107(**canceled**)

32

~~108.~~ **(previously presented)** The compound of claim 1, wherein X is S or -S(O)-.

33

~~109.~~ **(previously presented)** The compound of claim 1, wherein R² is methyl, ethyl or propyl.

34

~~110.~~ **(previously presented)** The compound of claim 1, wherein R² is methyl.

35

~~111.~~ **(currently amended)** The compound of claim 1, wherein R³ is ^{optionally} ~~aryl~~ ^{substituted phenyl} ~~optionally~~ ^{substituted phenyl}.

36

~~112.~~ **(currently amended)** The compound of claim ³⁵ ~~[[1]]~~ ¹¹¹, wherein R³ is halophenyl.

37

~~113.~~ **(currently amended)** The compound of claim ³⁵ ~~[[1]]~~ ¹¹¹, wherein R³ is 3-chlorophenyl.

114. **(canceled)**

38

~~115.~~ **(currently amended)** The compound of claim 1, wherein ~~R⁴ is C(O)N(R⁶)₂ and~~ R⁶ represents independently for each occurrence hydrogen or alkyl.

39

~~116.~~ **(previously presented)** The compound of claim 1, wherein X is S, n is 1, m is 1, R¹ is hydrogen, R² is methyl, and R³ is 3-chlorophenyl.

117. **(canceled)**

40

~~118.~~ **(previously presented)** The compound of claim 1, wherein X is S, n is 1, m is 1, R¹ is hydrogen, R² is methyl, R³ is 3-chlorophenyl, and R⁴ is C(O)N(H)iPr.